

Section of a multi-stage turbomachine, definition of annulus areas

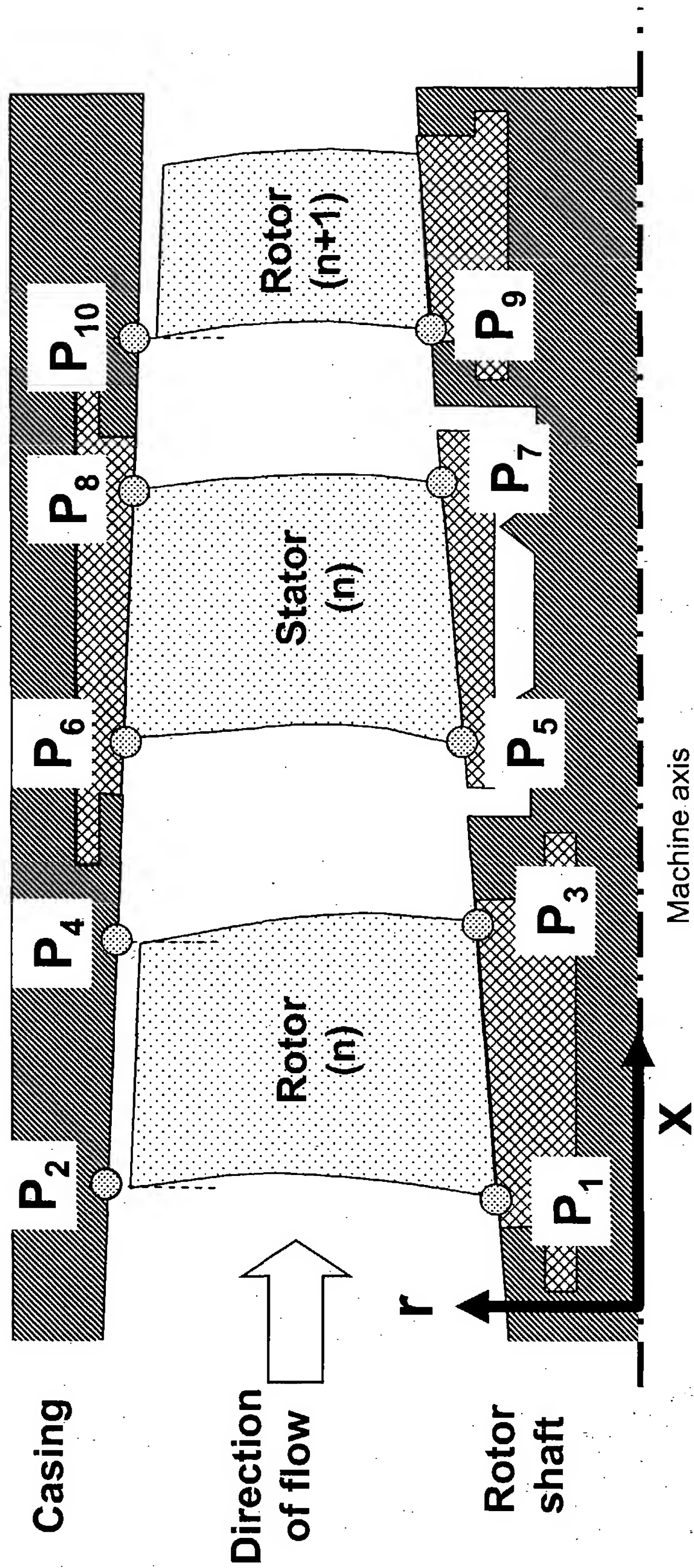


Fig. 1

Specification of the rotor-stator contraction ratio QRS and the axial-gap contractions KX1, KX2

$$P_i = P(X_i, R_i)$$

$$ARI = \pi(R_2^2 - R_1^2)$$

$$ARA = \pi(R_4^2 - R_3^2)$$

$$ASI = \pi(R_6^2 - R_5^2)$$

$$ASA = \pi(R_8^2 - R_7^2)$$

$$ARI2 = \pi(R_{10}^2 - R_9^2)$$

$$KR = ARI / ARA$$

$$KS = ASI / ASA$$

$$KT = ARI / ASA$$

$$QRS = KR / KS$$

$$KX1 = ARA / ASI$$

$$KX2 = ASA / ARI2$$

$$[0.2 + (KT - 0.45)^{0.1}] < QRS < 3.0$$

$$0.8 < KX1 < 1.0$$

$$0.8 < KX2 < 1.0$$

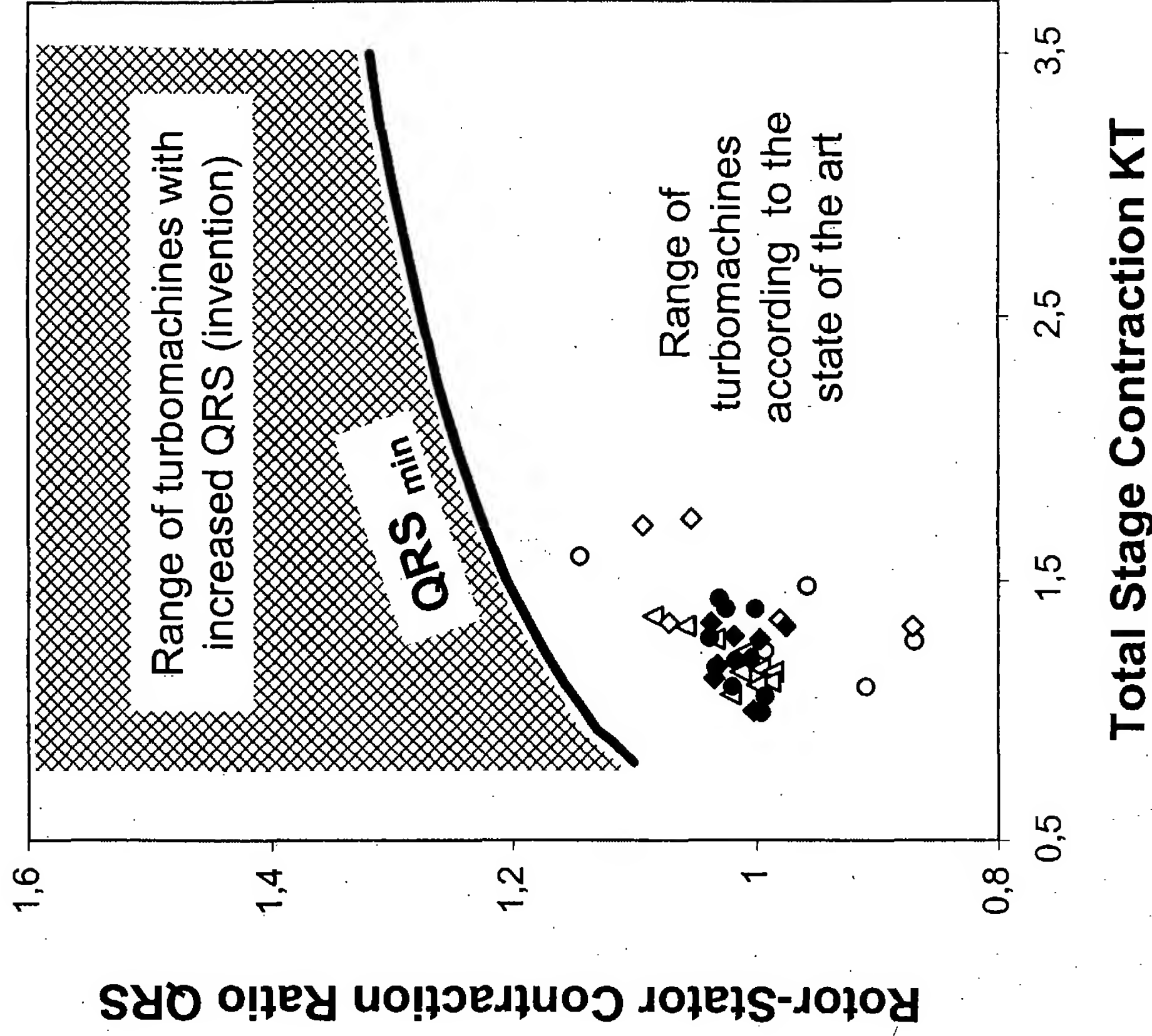


Fig. 2

Example of a multi-stage turbomachine with increased rotor-stator contraction ratio
(present invention in comparison with the state of the art)

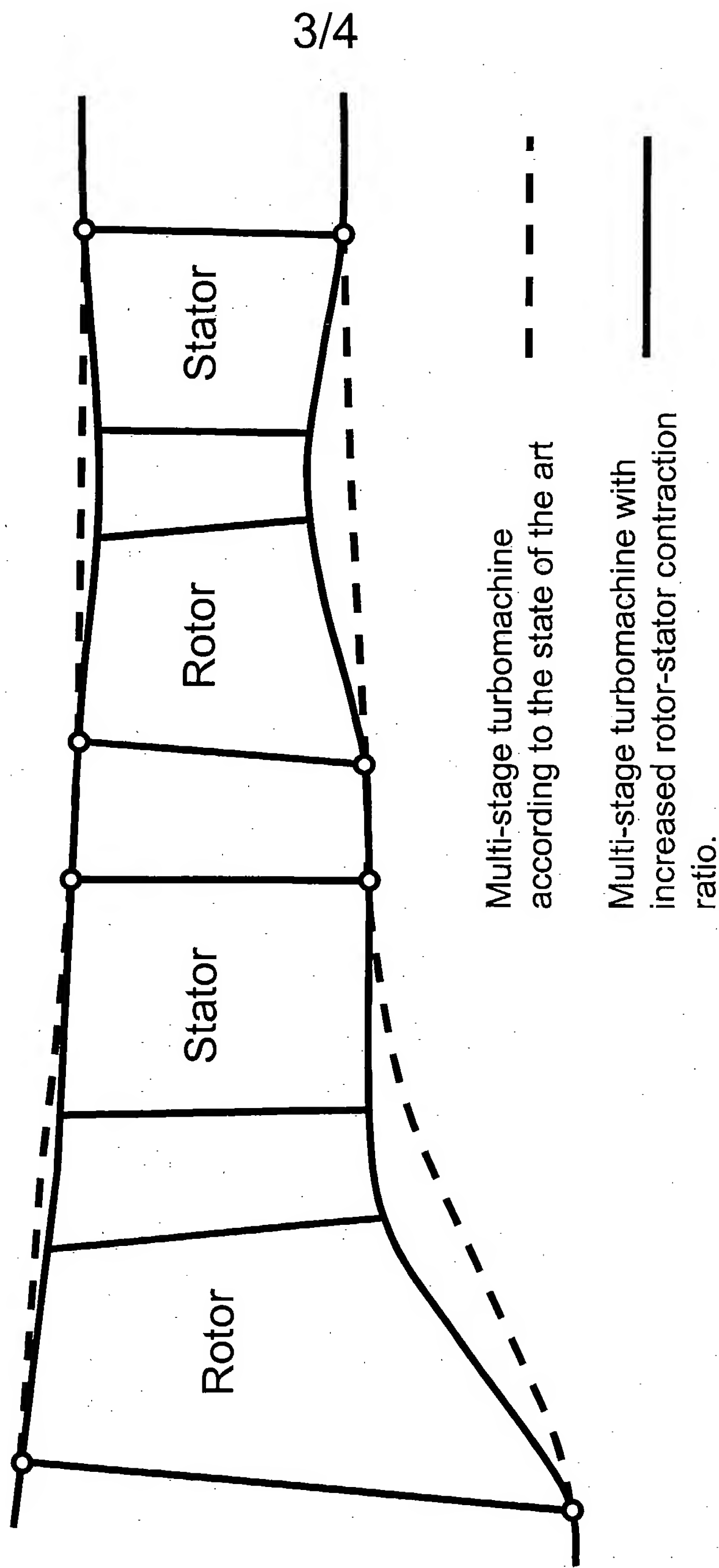
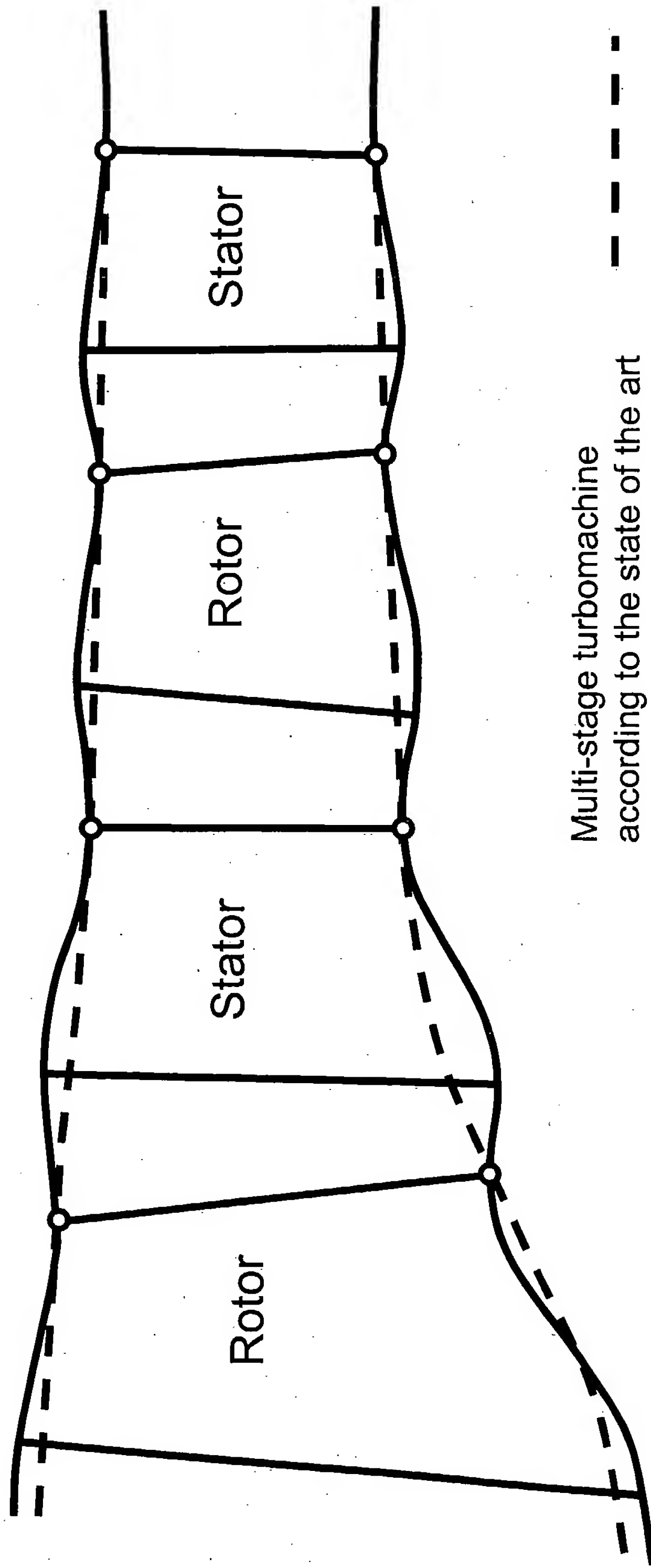


Fig. 3

Example of a multi-stage turbomachine with axial-gap contractions below 1.0
(present invention in comparison with the state of the art)



Multi-stage turbomachine
according to the state of the art

Multi-stage turbomachine with
axial gap contraction below 1.0

Fig. 4